REMARKS

Claims 21-24 and 27-31 currently appear in this application. The Office Action of ay 2, 2002, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicants respectfully request favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Claims 21-24 and 27-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seike in view of Jackson.

This rejection is respectfully traversed. Neither Seike nor Jackson teaches the production of vinegar using a citrus juice having a pH value of 3.0 or more, which pH value has been adjusted by removing a part of or all of the citric acid in the juice, so as to make acetic acid bacteria effect acetic acid fermentation.

Seike discloses a method for producing vinegar by using a citrus juice in which sodium citrate is added to the original juice so as to elevate the pH value to 4.6, as can be seen from the English translation of Seike's application. This translation was filed with the amendment of April 4, 2002. The citrus juice used in the Example of producing vinegar in Seike is mandarin orange

juice (*Citrus unshiu* juice) which has a citric acid content of only about 1%. However, the citric acid content of lemon juice is much higher, *i.e.*, about 6%, as can be seen from the reference *Newest Cyclopedia of Fruit Juice and Fruit Drink*, filed with the amendment filed April 4, 2002. Accordingly, when producing vinegar from lemon juice, much more sodium citrate must be added to lemon juice than to mandarin orange juice in order to neutralize the citric acid. Therefore, this large amount of sodium citrate which must be added adversely affects the taste of the resulting vinegar produced from a citrus juice which has a high concentration of citric acid, such as lemon juice.

Seike discloses making vinegar from mandarin orange juice, which has a very low concentration of citric acid. The present invention is directed to making vinegar from citrus juices which may have a much greater concentration of citric acid in the juice than is found in mandarin orange juice. Addition of large quantities of sodium citrate adversely affect the taste of the vinegar made from these juices.

Rather than adding sodium citrate to the juice to raise the pH, the present invention **removes** excess citric acid from the juice, so that no additional ingredients which may affect the taste need be added. In

Seike an alkaline agent is added to increase the pH, whereas in the present invention the citric acid, which is responsible for the low pH, is removed from the juice. There is no suggestion in Seike that the pH could be increased by removing some of the acid from the juice only by adding an alkaline agent.

The fact that the amount of citric acid reduction is a result effective variable is immaterial. The present invention **removes** excess citric acid, while Seike **adds sodium citrate**. One skilled in the art would readily recognize that deleting one component from a juice produces a different taste from adding a component to a juice while maintaining the other component in the juice. Jackson teaches reducing the acidity of wine or grape juice by adding calcium carbonate and column ion exchange. However, Jackson is concerned with producing wine rather than vinegar, and notes that deacidification typically occurs **after** fermentation, when it effect on acidity is known (page 22, left column). Jackson notes that deacidification can be based on actual rather than projected need, and flavor production also is generally better in musts fermented at a low pH. Also, deacidification of excessively acidic juice low in pH may involve blending the juice of lower acidity but higher pH, in addition to neutralizing the acid.

There is nothing in Jackson that one skilled in the art would combine with Seike to arrive at the presently claimed invention. Seike adds sodium citrate to neutralize acid in the juice to be fermented to vinegar, and Jackson adds calcium carbonate, etc. to deacidify excessively acid grape juice intended for wine production. The acid with which Jackson is concerned is malic acid. The Examiner has failed to show motivation to combine these references to suggest producing vinegar from high citric acid juice in which the pH is lowered by removing **citric** acid.

As the Federal Circuit stated in *In re Lee*, 61 USPQ2d 1430 (January 18, 2002, Fed. Cir.), "As applied to the determination of patentability *vel non*, when the issue is obviousness, 'it is fundamental that rejections under 35 U.S.C. 103 must be based on evidence comprehended by the language of that section.' *In re Grasselli*, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000)… When patentability turns on the question of obviousness, the search for an analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness *See, e.g., McGinley v. Franklin Sports, Inc*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ('the central question is whether

there is a reason to combine [the] references,' a question of fact drawing on the *Graham* factors."

'The factual inquiry whether to combine references must be thorough and searching.' *Id.* This precedent has been reinforced in myriad decisions, and cannot be dispensed with, *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). ('a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential component of an obviousness holding"') (quoting *C. R. Bard, Inc. v. M3 Systems, Inc.* 48 USPQ2d (Fed. Cir. 1998)) The Court went on to quote *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999), "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."

There is a requirement for specificity in combining references, *See, In re Kotzab*, 55 USPQ2d 13134, 1317 (Fed. Cir. 2002)("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.").

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seike in view of Jackson and in further view of Castillon et al.

This rejection is respectfully traversed. As discussed above, claim 21 is allowable over the cited art, and the fact that Castillon et al. use a ceramic support for a filtration membrane adds nothing to Seike and Jackson to render claim 31 unpatentable.

In the Examiner's response to applicant's arguments, the Examiner states that addition of sodium citrate as in the prior art would be considered a mild alkaline agent.

However, a large amount of sodium citrate is required to elevate the pH of the juice to 4.6 for a juice with a high citric acid content such as lemon juice. Sodium citrate is a weak alkaline agent, so a greater amount of sodium citrate would be required to elevate the pH of a juice which has a high concentration of citric acid, adversely affecting the flavor of the resulting vinegar.

The Examiner attempts to distinguish the present invention's adding the alkali to a moromi, while the prior art adds it at the juice stage. However, sodium citrate adversely affects the taste of the juice and fermentation products made therefrom, whether the

sodium citrate is added at the juice stage or to the moromi. The yeast used for alcoholic fermentation does not consume sodium citrate to produce alcohol. In fact, Jackson states that low acid juice must be acidified prior to fermentation to limit the growth of spoilage microorganisms.

Jackson teaches reducing the acid content of grape juice for improving the flavor of wine produced from the grape juice. However, Jackson is silent with respect to the effect of citric acid on acetic acid bacteria.

In the present invention, the amount of citric acid in the juice is reduced to make it possible for the acetic acid bacteria to effect acetic acid fermentation of a juice having a high acid content (*e.g.*, lemon juice). In making wine, there is no acetic acid fermentation—it is strictly a fermentation to produce ethanol from sugars in the grape juice. These are two completely different types of fermentation. Jackson produces ethanol from grape juice, and the present invention produces vinegar, containing acetic acid, from citrus juices. One skilled in the art would readily recognize that ethanol fermentation is not the same as acetic acid fermentation. In fact, one producing wine

would be particularly careful **not** to produce acetic acid, as that would ruin the wine.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,
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"Version with markings to show changes"

21. (Fourth Amendment) A method for producing a fruit vinegar comprising subjecting to acetic acid fermentation by acetic acid bacteria in the presence of ethanol one member selected from the group consisting of (a) and (b), wherein

(a) is a member selected from the group consisting of lemon juice, lime juice, yuzu juice, kabosu juice, sudachi juice, and shii kuwasa juice, wherein said member is

(1) juice having naturally a pH value of 3.0 or more;

(2) juice having a pH value of 3.0 or more adjusted, not by addition of an agent to neutralize citric acid but by reducing citric acid content by from 50 to 100% by weight, or

(3) a mixture of (1) and (2); and

(b) a dilution of (a);

wherein the reducing of citric acid content in (2) has been effected by

(i) adding calcium carbonate to the member to precipitate calcium citrate and removing the calcium citrate or

(ii) contacting the member with an anion exchange ~~member~~ resin to remove citric acid therefrom.